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Do Parenting Programmes for Severe Child Antisocial Behaviour Work over the Longer Term, and for Whom? One Year follow-up of a Multi-Centre Controlled Trial

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Abstract. The aim of the study was to see whether there were lasting effects of a behaviourally-based group parenting programme when delivered in a real life, regular clinical practice setting. Follow-up was one year after the end of a controlled trial that involved four local child and adolescent mental health services in London and Southern England. The participants were fifty-nine children aged 3–8 years referred with antisocial behaviour, whose parents received the Webster-Stratton Incredible Years basic videotape group programme. Those in the waiting list control group were not followed up as some went on to receive the same intervention. Measures included the semi-structured parent interview (PACS) and questionnaire (SDQ) about child behaviour. At follow-up, the original improvement in the intervention group was found to have persisted, with no loss of treatment effectiveness (effect size compared to pre-treatment score 0.91 standard deviations, compared to post treatment score $-0.06 SD$). The proportion of children in the clinical range before treatment was 68%, at follow-up 37%. Children with the most severe initial problems changed the most; risk factors such as low income, being a lone parent, or being in an ethnic minority did not reduce treatment effectiveness. Parenting groups can reduce serious child antisocial behaviour effectively in the longer term. This is an important ongoing benefit for the children and their families. If this trajectory continues to be maintained in the future, then the poor long-term prognosis, which includes criminality and social exclusion, is likely to be improved.

Keywords: Antisocial behaviour, controlled trial, parenting programme, follow-up study, predictors, outcome.

Introduction

Aggression and fighting are part of normal child development and can help children to assert and defend themselves. Persistent, poorly controlled antisocial behaviour, however, is socially handicapping and often leads to poor adjustment in adults (Scott, 1998). This pattern of behaviour was found in 5% of children in England using the relatively conservative ICD-10 (World Health Organization, 1992) research criteria for conduct disorders (Meltzer, Gatward, Goodman and Ford, 2000). Moreover, the prevalence of serious antisocial behaviour is rising in Britain and Westernized countries (Collishaw, Maughan, Goodman and Pickles, 2004). The

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children live with high levels of criticism and hostility from their parents and are often rejected by their peers (Rutter, Giller and Hagell, 1998). Truancy is common, most leave school with no qualifications, and over one-third become recurrent juvenile offenders (Farrington, 1995). In adulthood, offending usually continues, relationships are limited and unsatisfactory, and the employment pattern is poor. The long-term public cost from childhood for individuals with this behaviour is up to 10 times higher than for controls, and involves many agencies (Scott, Knapp, Henderson and Maughan 2001).

Clinically, antisocial behaviour accounts for 30–40% of referrals to child mental health services (Audit Commission, 1999). Most of these referrals meet general *clinical* diagnostic guidelines for conduct disorders from ICD-10, which require at least one type of antisocial behaviour to be marked and persistent. Rather fewer meet the diagnostic criteria for *research*, which for the oppositional defiant type of conduct disorder seen in younger children require at least four specific behaviours to be present (World Health Organization, 1993). The early onset pattern – typically beginning aged 2 or 3 years – is associated with comorbid psychopathology such as hyperactivity and emotional problems, language disorders, neuropsychological deficits such as poor attention and lower IQ, high heritability (Silberg et al., 1996), and lifelong antisocial behaviour (Moffitt, 1993). In contrast, teenage onset antisocial behaviour is not associated with other disorders or neuropsychological deficits, is more environmentally determined than inherited, and tends not to persist into adulthood (Moffitt, 1993).

Harsh, inconsistent parenting is strongly associated with antisocial behaviour in children (Farrington, 1995) but whether this is cause or consequence or due to common genetic predisposition has been less clear (Rutter et al., 1998). The pioneering work of Patterson and colleagues showed that parents had a causal role in maintaining antisocial behaviour by giving it attention and in extinguishing desirable behaviour by ignoring it (Patterson, 1982). This led to behaviourally based training interventions for parents, which have been shown to be effective in many studies in the United States (Kazdin, 1997). In trials from the university parenting clinic of its originator, the Incredible Years programme has proven successful at one year (Webster-Stratton, Hollingsworth and Kolpacoff, 1989) and two year follow-ups (Reid, Webster-Stratton and Hammond, 2003).

Trials in real life settings

Most trials of parenting programmes have been carried out in specialized university research clinics by the team who invented the treatment, who are highly motivated, extensively trained, and deal only with antisocial behaviour. Many trials used volunteers or people selected by referrers as willing to take part in parenting projects, thus excluding many disorganized, unmotivated, or disadvantaged families, who have the most antisocial children (Meltzer et al., 2000). A review of meta-analyses of published trials of psychological treatments for childhood disorders found that in university settings the effect size was large, from 0.71 to 0.84 standard deviations (*SD*) (Weisz, Weiss and Donenberg, 1992). In contrast, a review of six studies of outcome in regular service clinics since 1950 showed no significant effects (Weisz et al., 1992), and a large trial offering unrestricted access to outpatient services found no improvement (Andrade, Lambert and Bickman, 2000). Reasons suggested for the poor outcome in clinic cases include that they have more severe problems, come from more distressed families, and receive less empirically supported interventions from staff with heavier caseloads. Some have concluded that “the good news is that child psychotherapy works, but the bad news is that it

doesn't in real life". The true picture may be even less encouraging as none of the clinic trials included an intention-to-treat analysis. There is thus a pressing need of trials to be conducted under "real life" conditions. A recent review by Weisz and colleagues (Weisz, Doss and Hawley, 2005) concluded that only 1% of clinical trials on childhood mental health problems met the criteria of (1) accepting clinically referred samples as participants (2) using regular clinic staff as therapists, and (3) taking place in a routine service setting.

This trial was the first substantial controlled trial of parent training the author is aware of in Europe to meet Weisz et al.'s three criteria, and the only other directly comparable one in the world did not have a long term follow-up, the last measures being taken 15 weeks after commencement (Taylor, Schmidt, Pepler and Hodgins, 1998). This trial investigated whether a behaviourally based parenting programme would be effective in an everyday NHS setting, taking standard referrals to child mental health services, and using regular clinic staff to carry out the intervention. The hypothesis was that children whose parents received management training would become less antisocial than those who received no such training.

William Yule

The trial described here probably would not have happened were it not for the outstanding contribution of William Yule to the Child and Adolescent Department at the Maudsley Hospital. After the Second World War, the new Labour government set up a number of new research institutes alongside the leading specialist hospitals in the UK. These included the Institute of Child Health next to Great Ormond Street Hospital for Children, the Institute of Neurology next to Queen Square Hospital, and the Institute of Psychiatry next to the Maudsley Hospital. A galaxy of star talent was attracted to work here, with Hans Eysenck, Jeffrey Gray, and now David Clark as Professors of adult psychology. In the children's department in the late sixties William Yule and Michael Rutter burst onto the scene and gave an enormous boost to the scientific study of psychological problems in childhood. Bill Yule's ground breaking scientific work illuminating the phenomenology, causal mechanisms, and treatment of a diverse range of conditions ranging from reading difficulties through to depression and Post Traumatic Stress Disorder in children is well known.

What is perhaps less well known is his continuing clinical service commitment in other domains for over 35 years. He headed up a department of clinical child psychologists who were at the forefront of introducing the new behavioural methods. In the 1980s, one of these teams introduced an electronic earbug to guide parents in their moment-to-moment interactions with antisocial children. It was exposure to this approach that led the present author to want to extend its application to parents in groups, and so to conduct the trial described here to test its effectiveness. Using the group format with parents had been piloted by Bill in the early 1980s (Sibisi and Yule, 1982).

At the Maudsley, as well as doing clinical work setting up and manning the clinic for trauma victims, Bill also worked in the Adoption and Fostering clinic from early on. Here he provided a model of interdisciplinary teamwork, working alongside highly skilled social workers, and a succession of psychiatrists: firstly Lionel Hersov, then Stephen Wolkind, and lastly the present author. Trainees noted repeatedly at their external appraisals that they had at last come to a team that was genuinely multidisciplinary – no mean compliment to Bill's skill, warmth and humour.

He has always given clinical work high priority. When, increasingly frequently, he was stepping off a plane from a trauma-stricken corner of the world, Bill would always come straight into the clinic, whereas lesser mortals would go home and catch up on sleep. Many hours a week were spent assessing and treating complex cases. Bill Yule's contribution would always be wide ranging, from physical aspects such as spotting a dysmorphic syndrome (he was one of the first to publish on behavioural phenotypes, and his text is invaluable (O'Brien and Yule, 1996), or checking for the effects of lead ingestion (Yule, 1992), to personal interpretation of psychological testing that would lead to practical advice (including, for left handers when necessary, how to hold a fountain pen so as not to smudge your work). The intervention was always taken outside the clinic to the school setting if necessary, when teachers would be advised directly how to handle the child (Berger, Yule and Wigley, 1987). This was coupled with an uncanny ability to know what children were thinking, a skill that would be the envy of many a psychoanalyst. Bill would be fearless but deft in probing hard realities, from how to handle having two fathers (adoptive and birth), to how to carry on with life after having seen your mother murdered in front of you, or owning up to a sense of failure as a parent because yes, you did in fact want to give up an adopted child. Being helped to face these situations frankly but sympathetically provided enormous relief for clients, who would come away feeling understood, and be able to begin to come to terms with their predicament. Crucially, however, over and above this, they would leave armed with helpful strategies to enable them to cope with their child, improve the relationship, and move on.

Out of this first rate individual service, he and the team set up a manualized 10-session programme to run groups for foster-carers in local communities, and an evaluation trial proved this was effective in improving carer confidence and child outcomes in this notoriously hard to treat population (Pallett, Scott, Blackeby, Yule and Weissman, 2002); the programme has recently been published as an attractive manual (Pallett, Blackeby, Yule, Weissman and Scott, 2005). The distinction of the team was recently recognized by the UK government who awarded it the contract to adapt the Oregon model of Multidimensional Treatment Foster Care and supervise its introduction to 20 local authorities all over England (Roberts, Jones and Scott, 2004). The foster care programmes and the study reported here are fitting tributes to Bill's continuing influence in bringing innovative, scientifically based, humane and effective practice to a wide range of families and young people in need.

Method

Study population

The original trial is described more fully in Scott, Spender, Doolan, Jacobs and Aspland (2001). It took place in four NHS child and adolescent mental health services: Croydon, Brixton/Belgrave/Camberwell, St George's (all South London); Chichester (West Sussex). The relevant ethics committees approved the project. Eligible children were all those aged 3 to 8 years who were referred for antisocial behaviour to their local multidisciplinary child and adolescent mental health service. The only exclusion criteria were if a markedly different treatment modality appeared indicated at assessment: clinically apparent severe major global developmental delay (mental retardation requiring referral to a specialist service, 3% of referrals), specific learning disorders such as reading retardation were not exclusion criteria

Table 1. Intervention programme

Content
<ul style="list-style-type: none"> • Structured sequence of topics, introduced with video clips of parents with children • Topics include play, praise, incentives, setting limits, and discipline • Emphasis on promoting sociable, self-reliant child behaviour, and calm parenting • Constant reference to parent's own experience and predicament • Theoretical basis informed by extensive empirical research and made explicit • Detailed manual available to ensure treatment fidelity and to enable replicability
Delivery
<ul style="list-style-type: none"> • Collaborative approach acknowledging parents' feelings and beliefs • Difficulties normalised, humour and fun encouraged • Parents supported to practise new approaches during session and through homework • Written feedback from parents after every session • Creche, good quality refreshments, and transport provided • Group leaders supervised weekly to ensure treatment fidelity and to develop skills, using videotape of last session to rehearse therapeutic approach

and are common in this group; hyperkinetic disorder (severe pervasive hyperactivity both at home and at school, meeting ICD-10 criteria, requiring medication, 16% of referrals); or any other condition requiring separate treatment, such as child abuse (all other conditions excluded formed 13% of referrals); for further details see Scott, Spender et al. (2001). Parents had to be able to understand English and attend at group times. Written consent was obtained. Follow-up was only attempted on those allocated to the parenting programme, as those in the waiting list control group then went on to receive a diverse range of treatments that included medication, individual and, crucially, the same group parenting training that the original intervention group had received. This meant follow-up comparison was not possible with a previously defined control group that was either untreated, or who had had typical eclectic individual work.

Intervention

This was the basic videotape parent training programme developed by Webster-Stratton (Webster-Stratton and Hancock, 1998). Voices were dubbed into English accents. The parents of six to eight children were seen as a group for 2 hours each week over 13–16 weeks; the children did not take part, and no other treatment was given. The programme is summarized in Table 1, and covers play, praise and rewards, limit setting, and handling misbehaviour. In each session, two group leaders showed videotaped scenes of parents and children together, which depict “right” and “wrong” ways of handling children. Parents discussed their own child's behaviour and were supported while they practised alternative ways of managing it. Each week tasks were set for parents to practise at home and telephone calls made to encourage progress. Therapists held regular jobs in their local service, came from a range of disciplines, and were trained over 3 months. Intervention sessions were videotaped and weekly supervision meetings were held to ensure adherence to the manual (Webster-Stratton and Hancock, 1998).

Measures

These were originally taken from mothers on entry to the trial (“before”) and after completing the intervention or waiting list period, 5 to 7 months later (“after”). The follow-up study reported here was conducted a year later, a mean of 1.72 years (*SD* 0.35, range 1.14 – 2.76) after first entering the trial. There were three measures: (1) a demographic interview covering family descriptive characteristics and living circumstances; (2) the Parent Account of Child Symptoms was the primary outcome measure of antisocial behaviour. This is a well validated semi-structured interview that uses investigator based criteria to assess the frequency and severity of antisocial behaviours such as fighting, destruction, and disobedience; scores are strongly predictive of later psychosocial outcome (Taylor, Chadwick, Heptinstall and Danckaerts, 1996). The *k* inter-rater reliability statistic on 20 randomly selected interviews was 0.84 for the conduct problems scale, 0.81 for the hyperactivity scale and 0.76 for the emotional problems scale. (3) the Strengths and Difficulties Questionnaire (SDQ – Goodman, 1997). This widely used instrument has 25 questions, covering conduct problems, hyperactivity, emotional problems, peer relationship problems and prosocial behaviour; the first four scales can be combined to give total deviance score. (4) In the Parent Defined Problems questionnaire (Scott, Spender et al., 2001), the parents were asked to list the three problems they would most like to see change, and to indicate the severity of each on a 10-centimetre line labelled “not a problem” at one end and “couldn’t be worse” at the other. The distance of the mark along the line was measured, and the mean score for all three problems was calculated. Examples of the problems listed by parents included “hitting his sister”, “refusing to go to bed”, “tantrums when asked to do anything”, “jealousy”, “fighting”, “swearing”, “no respect for me”, and “spitting”.

Analysis strategy

Paired *t* tests were used to examine change from before to follow-up and from after to follow-up. All allocated cases for which there were follow-up data were analysed, irrespective of how much intervention they received, thus including cases who received no intervention at all and those who dropped out; i.e. this was an ‘intention to treat’ analysis.

Assignment

In each centre participants were originally allocated to intervention or control (waiting list) using a permuted block design (Altman, 1982). Each block consisted of a consecutive 3-month period, during which all eligible referrals were allocated to one arm of the trial. This design was chosen with the aim of recruiting at least six cases per parenting group, with the assumption that 5–15 cases were referred in each block. Allocation was determined by date of receipt of referral letter. Participants in the control arm were offered treatment after completion of the trial.

Masking

Parents were blind to allocation at initial assessment; interviews were carried out by researchers blind to the duration or sequence of blocks. Follow-up assessments were carried out by a

Table 2. Characteristics of children and families, and UK norms

	Parenting group followed up (<i>n</i> = 59)	Parenting group lost to follow-up (<i>n</i> = 14)	<i>p</i> value group difference*	Original waiting list controls (<i>n</i> = 37)	Mean UK values†
Child					
<i>Percent male</i>	71% (42/59)	78% (11/14)	0.80	73% (27/37)	51%
<i>Age on entry to trial</i>	5.34 (1.61)	5.50 (1.39)	0.68	5.97 (1.72)	
<i>Age at follow-up</i>	7.00 (1.66)				
<i>Antisocial behaviour</i> ⁺	1.52 (0.45)	1.74 (0.38)	0.04	1.53 (0.42)	0.8 (0.4)
<i>Hyperactivity level</i> ⁺	1.15 (0.69)	1.37 (0.69)	0.83	1.13 (0.65)	0.5 (0.5)
<i>Emotional problems</i> ⁺	0.71 (0.60)	0.80 (0.53)	0.54	0.69 (0.37)	0.5 (0.3)
Family					
<i>Lone parent</i>	38% (20/53)	57% (8/14)	0.19	39% (14/36)	7%
<i>Parent in ethnic minority</i>	10% (5/48)	43% (6/14)	0.03	13% (4/31)	9%
<i>Mother left school by 16</i>	48% (25/52)	50% (7/14)	0.80	57% (20/35)	13%
<i>Council housing</i>	40% (23/58)	57% (8/14)	0.16	54% (19/35)	17%
<i>No car</i>	38% (22/58)	50% (7/14)	0.45	44% (16/36)	28%
<i>Child eligible for free school meals</i>	45% (25/55)	57% (8/14)	0.31	50% (17/34)	18%
<i>Total weekly income ≤£175</i>	19% (8/43)	36% (5/14)	0.06	28% (10/30)	5%
<i>Number of sessions attended</i>	10.8	10.7	0.87		

Denominators vary due to missing data.

⁺ Child difficulties assessed by PACS interview; UK norms from Taylor et al. (1991).

* significance of difference between those followed up and those lost to follow up, using independent *t* test for continuous variables and Chi square with Fishers exact test for dichotomous variables.

† Data from *Social Trends* London: Office of National Statistics, 2000.

different researcher to avoid the parent giving socially desirable responses, but blinding at this stage was often not possible as parents talked about treatment.

Results

Participants

Fifty-nine of the 73 (81%) original families allocated to the parenting programme were successfully contacted and interviewed. Of the 14 families not interviewed, 11 could not be traced and 3 refused. Table 2 gives characteristics of the children and families. Compared with population norms, far more of the children were living in poverty, and with lone parents who had left school early. Their mean scores on referral were above the 97th centile for antisocial behaviour, above the 90th centile for hyperactivity, and above the 78th centile for emotional problems. There were significant differences between those lost to follow-up and the remainder on 2 out of 14 characteristics: the children were more antisocial on referral, and more were in an ethnic minority; there was also a trend towards more of them living on very low incomes. However, the size of their initial improvement after the intervention was slightly larger, 1.13 *SD* compared to 0.91.

Programme attendance and cost

The mean attendance of those followed up was 10.8 sessions (*SD* 3.9, range 1–18). Seven (12%) of the 59 families attended five or fewer times, which might be considered dropping out, and 52 (88%) attended six or more, which might be considered reasonable compliance. The programme cost £571 per child in contrast to £563 for usual individual treatment of six sessions, calculated using standard economic methods (Scott, Knapp et al., 2001). In the year leading up to referral, the services used by the children due to their antisocial behaviour had cost £5,960 (Romeo, Knapp and Scott, in press), suggesting that even a modest improvement in symptoms could be cost-effective.

Child behaviour

Table 3 gives results on the outcome measures from the semistructured interview. For antisocial behaviour, the primary outcome, intervention children had shown a large improvement from before to after, whereas control children had shown no change; the difference between groups was 1.06 standard deviations. At follow-up, the improvement in those allocated the intervention was maintained with no loss of effectiveness. A similar picture was seen for hyperactivity, although the before to follow-up changes just missed two-tailed significance. Emotional problems continued to decrease. The Strengths and Difficulties Questionnaire results showed a similar picture, although with somewhat smaller effect sizes – see Table 4. Conduct and hyperactivity changes were maintained, and emotional problems improved further. However, peer relationship problems, which had not improved immediately after treatment, failed to get any better in the longer term. The Parent Defined Problems Questionnaire showed the largest effect size of all, 2.2 *SD*, and the problems continued to improve after treatment, by a further 0.6 *SD*.

Clinical significance

The mean initial score for conduct problem on interview was above the 97th percentile on population means, well into the clinical range. After intervention it fell to below the 82nd centile, within the normal range, where it remained at follow-up. A number of indices of clinically significant change are given in Table 5. Taking as a minimal clinically useful improvement the value of 0.3 of a standard deviation at follow-up, two-thirds of the sample (68%) made at least this modest change. Taking a larger criterion of at least 0.8 *SD* (deemed a large effect size by Cohen, 1988), over half the sample (53%) made at least this large change; taking 1.5 *SD*, a quarter (25%) made a very large change. As the intervention had a larger effect on more severe cases (see below), the proportion changing was improved in those who were in greatest need, as indexed by being in the clinical range (worst 10% of the population). Amongst these, 78% made at least a modest change, 63% made at least a large one, and 38% made a very large change. Put the other way round, the intervention failed to improve in a clinically significant way a fifth (22%) of those in the clinical range, and a third (34%) of all the children studied.

In terms of displaying a level of disturbance equivalent to having an ICD-10 (WHO, 1992) diagnosis of conduct disorder (including oppositional-defiant disorders) by being above the 95th percentile (conduct disorders were found in 5% of the population in the British Mental

		Raw scores										
					Change before to follow-up*				Change after to follow-up*			
		Before Mean <i>(SD)</i>	After Mean <i>(SD)</i>	Follow-up Mean <i>(SD)</i>	Difference (95% CI)	Effect size	T value	Significance (<i>p</i>)	Difference (95% CI)	Effect size	T value	Significance (<i>p</i>)
Conduct Symptoms	Intervention (<i>n</i> = 59)	1.52 (0.45)	1.11 (0.50)	1.12 (0.48)	0.41 (0.27 to 0.54)	0.91	6.05	<0.001	0.01 (−0.10 to 0.14)	0.02	0.16	0.91
	Controls (<i>n</i> = 37)	1.53 (0.42)	1.59 (0.34)									
Hyperactivity	Intervention (<i>n</i> = 59)	1.13 (0.70)	0.95 (0.74)	0.96 (0.78)	0.16 (−0.02 to 0.34)	0.23	1.79	0.08	0.01 (−0.09 to 0.21)	0.01	0.19	0.89
	Controls (<i>n</i> = 37)	1.13 (0.75)	1.16 (0.58)									
Emotional Symptoms	Intervention (<i>n</i> = 59)	0.71 (0.60)	0.60 (0.45)	0.53 (0.47)	0.18 (0.05 to 0.31)	0.30	2.72	0.008	0.08 (−0.03 to 0.20)	0.13	1.43	0.16
	Controls (<i>n</i> = 37)	0.62 (0.37)	0.60 (0.38)									

Table 5. Indices of clinically significant change (follow-up vs before intervention)

		Proportion of children	
		In whole sample	In those starting in clinical range*
Antisocial behaviour	Size of change		
	Modest improvement or more (≥ 0.3 SD)	68% (40/59)	78% (31/40)
	Large improvement (≥ 0.8 SD)	53% (31/59)	63% (25/40)
	Very large improvement (≥ 1.5 SD)	25% (15/59)	38% (15/40)
		Proportion of children	
Severity of child difficulty		Before	Follow-up
Antisocial behaviour	in clinical range*	68% (40/59)	37% (22/59)
	at level of diagnosis [#] of ODD	51% (30/59)	22% (15/59)
Hyperactivity	in clinical range*	46% (27/59)	36% (21/59)
	at level of diagnosis [#] of ADHD	37% (22/59)	34% (20/59)
Emotional problems	in clinical range*	36% (21/59)	24% (14/59)
	at level of diagnosis [#] of ED	31% (18/59)	15% (9/59)

*In clinical range: ≥ 90 th %ile [#] at level of diagnosis: ≥ 95 th %ile, ODD = Oppositional Defiant Disorder, ADHD = Attention Deficit Hyperactivity Disorder, ED = Emotional Disorder

Health Survey – Meltzer et al., 2000), half (51%) the sample were at this level before treatment, reducing to a fifth (22%) at follow-up.

Prediction of longer-term outcome: for whom did the programme work?

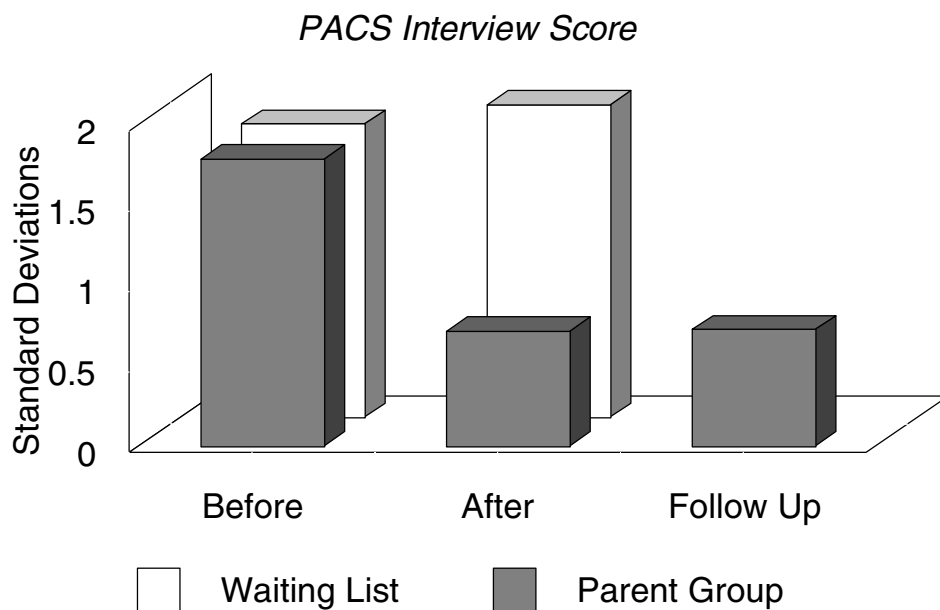
A striking finding of this study is that the intervention was much more effective for children with severe antisocial behaviour at presentation (see Table 6). The impact of this is shown in Figure 2, where antisocial behaviour at presentation and follow-up is divided into quartiles according to severity at presentation. Each quartile shows at least double the change of the previous one, so that those with only mild initial problems (z score 0.5 SD above the mean) changed little, by only 0.1 SD; whereas those with the severest initial problems (z score 3.25) changed a great deal, by 2.2 SD.

After taking initial severity of antisocial behaviour into account, no other variable significantly predicted response to treatment. In particular, a number of predictors of poor outcome in longitudinal studies (Rutter et al., 1998; Moffitt and Caspi, 2001) did not appear to be barriers to successful treatment. This was not just because of a relatively modest sample size, since the beta coefficients were generally small; thus indices of family disadvantage had betas of under 0.1 to 0.15, as did the child's having early onset problems or the mother being depressed. Nonetheless, four factors had betas of over 0.2, and although not statistically significant with this sample size, they came close and may be indicative of less change. Child hyperactivity (beta = 0.23) is a well recognized predictor of worse outcome in longitudinal studies, especially when, as here, it coexists with antisocial behaviour (Taylor et al., 1996). However, other studies using this parenting programme have found that hyperactivity did not lead to less change (Hartman, Stage and Webster-Stratton, 2003). The trend for child age (beta 0.21) was in the opposite direction to that expected, with older children doing better rather

Table 6. Predictors of longer-term change in antisocial behaviour*

	n	Standardized β	Significance, two tailed
Significant predictors			
More severe initial antisocial behaviour	59	0.38	<0.000
Not significant – no barrier to change			
<i>Child factors</i>			
Male	59	-0.15	0.22
Ethnic minority	59	-0.05	0.80
Older child	59	0.21	0.08
Early onset problems	56	-0.12	0.38
Hyperactive	59	-0.23	0.08
Emotional problems		0.16	0.20
Language problems – receiving therapy	52	-0.27	0.06
<i>Family factors</i>			
Mother in ethnic minority	50	-0.07	0.60
Family income less than £175 per week	51	-0.03	0.90
Maternal depression (Beck score)	51	-0.16	0.26
Maternal education level	52	-0.15	0.28
Shorter pregnancy	56	-0.23	0.06
<i>Therapy factors</i>			
Sessions attended (binary variable, ≤ 8 or 9+)	54	0.15	0.25
Sessions attended (continuous variable)	54	0.01	0.95

*multiple regression analysis, with antisocial behaviour at follow-up entered as the dependent variable, and antisocial behaviour before intervention, plus the variable described entered as dependent variables.

**Figure 1.** Child antisocial behaviour

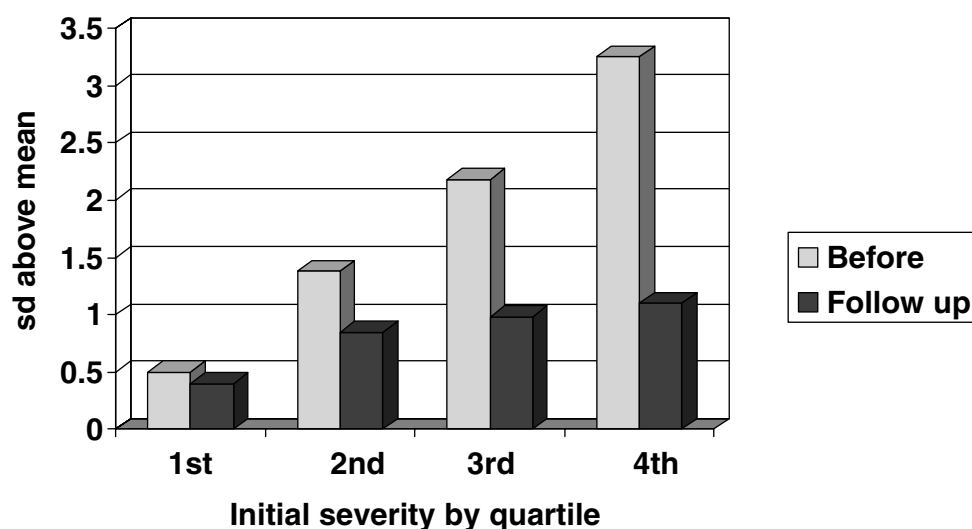


Figure 2. Before and follow-up antisocial behaviour, according to initial severity level

than worse. Receiving speech and language therapy ($\beta = -0.27$) nearly reached significance, and suggests the presence of marked language problems, which are a known risk factor for poorer academic performance and long-term outcomes. The effect for duration of pregnancy ($\beta = -0.23$) was in the expected direction, it being well established that prematurity confers a number of longer term risks for healthy development. However, inspection of the data revealed that all but one case were between 35 and 43 weeks, a range seldom associated with adverse outcomes, and that nine cases were 42 weeks, who changed by a large amount, so that in this study, gestation for longer than usual showed a trend towards being associated with greater change.

Dose-response relationship

The relationship between number of sessions attended and change was not statistically significant. When a binary division was made between those who had attended up to eight sessions and those who had attended nine or more, the size of change was doubled in the latter ($0.52\ SD$ vs $1.03\ SD$) but this was not statistically significant ($df = 52$, $t = 1.19$, $p = .24$), partly due to a small sample size of nine in the lower attending group. However, taking attendance as a continuous variable, no relationship at all was discernable (correlation with change 0.01). This may have occurred because amount of attendance is non-random, with those who left very early on doing so because they knew they could change themselves, having been given the book of the programme, and those who stayed right to the end may have done so because they still had not improved. Testing this, the change for the two cases who attended only one session was $2.0\ SD$, but for the four who attended 17 or 18 sessions was $0.0\ SD$, offering some support to the idea. Re-running the correlation between attendance and outcome dropping these cases increased it to 0.25 ($p = .10$), still not much of a relationship.

Discussion

The children in this study were at high risk of later juvenile delinquency and social exclusion because they had many adverse factors: they were behaving in a highly aggressive and antisocial way; many were also hyperactive and had emotional problems. Most were subjected to a host of disadvantageous living circumstances and were notably poor. Nonetheless, at follow-up, the children of parents allocated to parenting groups showed on average complete maintenance of the large reduction in antisocial behaviour that was evident after treatment a year previously. Those in the control group did not improve at all in the before to after period, so there is no suggestion that this sample was on a course of spontaneous remission or regression to the mean of the general population. The original gains in hyperactivity were also maintained. Emotional symptoms continued to improve too, although it is possible they may have been going to improve somewhat irrespective of treatment, since this is usual as children grow up – for example fears diminish and separation anxiety wanes.

Peer relationship problems as measured by the SDQ did not improve at follow-up, and had not improved in the original trial as a result of treatment. They remained on the 90th percentile. Peer relationship problems as tested in the SDQ refer to items such as not being liked by other children or having any friends, and being bullied. This lack of ability to make good friends is often associated with spending time instead with antisocial and deviant peers, which is an important risk factor for persisting antisocial behaviour (Poulin, Dishion and Haas, 1999). Therefore the design of parenting programmes in the future might benefit from a stronger element for improving friendship skills, and how to avoid the harmful influence of deviant peers. In the Incredible Years series, there is now a separate programme for children (rather than parents) that addresses prosocial behaviour and peer relationships, and this has proven effective (Webster-Stratton, Reid and Hammond, 2004). There are also other programmes for improving peer relationships, and that designed by Frankel is effective when delivered by parents (Frankel, Myatt, Cantwell and Feinberg, 1997).

The Parent Defined Problems Questionnaire was an important measure because it covered the problems as the parent saw them, which were different for each child, in contrast to professional measures such as the PACS and SDQ. This is especially relevant in an era when the client/consumer's voice is increasingly recognized – it would be less satisfactory if the professionals' measures of change showed improvement, but the client failed to see their concerns get better. Fortunately in this study the parent defined problems showed the largest improvement of all.

Size of change

The size of change was more than just statistically significant. Overall, the sample changed by 0.91 *SD*, a large change according to Cohen's (1988) criteria. This is large for any psychotherapeutic intervention, and particularly for one delivered in real life clinical conditions. Two-thirds of the sample showed at least a modest clinically significant change, and half showed at least a large one. Moreover, many of the third who showed no change did not have marked problems to begin with.

For whom did the intervention work?

In addition to finding that the intervention had a large effect size in the sample as a whole, another important finding of the study is that the greatest effects were seen in those whose

needs were greatest, the most severe cases. This finding is a hopeful one for such a chronic, disabling condition. It could be argued that (1) the reason for this finding is that the most severe cases have the furthest to fall, whereas those with few difficulties to begin with cannot become "supernormal", due to a floor effect of how much they can improve; (2) even where follow-up score is unrelated to initial score, the degree of change will be greater for more severe cases. However, these arguments do not inevitably follow, as there is no automatic reason why the most severe cases should improve, an indeed the natural history of antisocial behaviour that has been in the clinical range for over a year is to stay severe. Indeed, these cases are often in clinical lore notorious for being the hardest to treat. This is supported by experimental evidence; for example, in the treatment of depression using cognitive behaviour therapy, typically it is the mildly depressed cases that improve the most, while the severe ones tend not to change (Shapiro, Barkham, Rees and Hardy, 1994).

The intervention worked for children who had a range of additional risk factors, such as being in a lone parent household, in a family of low income, or where the mother had no educational qualifications. Thus the programme worked well for the clients who typically present with the problem; it was not just effective for the "worried well" who were more privileged. This is in contrast to Dumas and Wahler (1983), who found that socioeconomic disadvantage and mother insularity predicted a poorer response to parent training. Also, in the initial trial by the originator of this programme in a university setting, parental depression and lone parenthood predicted worse outcomes (Webster-Stratton and Hammond, 1990).

Amount of intervention received

The lack of a strong relationship with number of sessions attended is puzzling. One might expect a fairly strong dose-response relationship, whereby getting more of the intervention led to greater change; vice-versa, attending just one or two sessions would not seem to be enough to lead to substantial change in parenting practices. Dividing the sample into those who received eight or fewer sessions versus nine or more led to a doubling of the effect size, and although this missed statistical significance, it suggests that in a larger sample the effect would hold up. However, finer grained analysis using correlation of each child's change with attendance found no relationship at all. In part, this was because those at the extremes of attendance were different, with low attenders improving well and the best attenders doing badly. This is evidence that amount of attendance is non-random; to test more rigorously whether there is a relationship between number of sessions and outcome, it would be better to carry out a trial comparing a longer and shorter version of the same programme. When Shapiro's group (Shapiro et al., 1994) did this for cognitive behavioural therapy in adults with depression, they found that the shorter intervention was as effective as the longer one.

Methodological considerations

Effects were shown using two methods of measurement: parental perception, as detected using a questionnaire, and an objective assessment of behaviour, using a semi-structured interview in which the parent gave detailed examples of the behaviour in question, but the interviewer judged its severity according to objective criteria. Both approaches to measurement show good prediction of outcomes in adolescence and adulthood. No measure was taken of child behaviour in school as there was no intervention in this setting; parent training programmes show mixed results on behaviour in school (Scott, 2002).

The sample successfully followed-up were similar in characteristics to those not followed-up on most of the 14 child and family variables measured, but differed significantly on two, and showed a trend on a third. In the group lost to follow-up, the severity of child antisocial behaviour on entry to the trial was greater by 0.53 *SD*; 43% as opposed to 10% were from an ethnic minority; and there was a trend towards more having very low incomes, 36% as opposed to 19%. According to the results from those who were studied, the more severe initial behaviour would have been likely to lead to a bigger change, so this may have led to under-reporting of the intervention effectiveness; and ethnicity and very low income had no effect size of change. The fact that in the original trial the group lost to follow-up changed slightly more than those found also does not suggest they were resistant to treatment. Therefore it is unlikely that the sample found for follow-up displayed unrepresentatively favourable results.

There was no follow-up of the waiting list control group. This was because after the original trial, they no longer remained untreated, so a meaningful comparison of the group who received the parenting programme with a group who received no intervention was no longer possible. There is therefore the possibility that the control group would also have improved during the follow-up period, which would mean that the gains seen in the intervention group would not be attributable to treatment. However, this possibility seems unlikely; firstly, in this sample over the before to after period of 6 months, the control group did not improve at all (their scores worsened slightly), and secondly, follow-up studies of clinically referred cases of comparable severity also show no improvement, indeed they usually get worse (Lahey, Loeber, Burke and Rathouz, 2002). A longer term follow-up into adolescence is now underway to see whether the improvements continue to persist.

Implications for services

This study suggests that the intervention used is an effective, evidence based treatment for antisocial behaviour in children that has long-lasting effects even when deployed in "real life" everyday clinical conditions. It worked well with disadvantaged families and cost no more than traditional individual family treatment. Although this study was carried out in mental health services' clinic premises, groups can be, and have been, successfully delivered in Britain in community settings for both clinically referred and preventive cases, thus offering the opportunity to reduce stigma and increase accessibility (Harrington et al., 2000).

However, it would be wrong to conclude that parenting groups should automatically be offered as the only intervention for antisocial behaviour. Careful assessment of children is necessary as a proportion (a third in the original trial) have coexistent problems that require additional treatment in their own right. In the child these commonly include problems such as hyperkinetic disorder, post-traumatic stress disorder, and encopresis; in the family, they include investigation for child abuse. Such children were excluded from this trial only if those additional problems were so severe that additional treatment would have been mandatory, and would have made it hard to interpret which intervention was changing antisocial behaviour. In most cases parent training would be a beneficial and easily combined treatment.

The results are likely to be related to the programme chosen and its implementation. This programme coherently combines behavioural principles with sympathetic support and other features shown in the literature to enhance effectiveness (Scott, 2002). Implementation was by personable, committed staff given adequate training and weekly supervision to promote

treatment fidelity, which is crucial in order to get good effectiveness (Henggeler, Melton, Brondino, Schere and Hanley, 1997). During supervision, staff showed videotapes of their work in groups and received feedback on this, including role-playing alternative ways to run the parenting group. Such parenting programmes are only just beginning to become available in the UK. They show promise as a cost effective way to reduce the personal and economic burden of childhood antisocial behaviour, and to prevent criminality and social exclusion.

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